FIG. 1

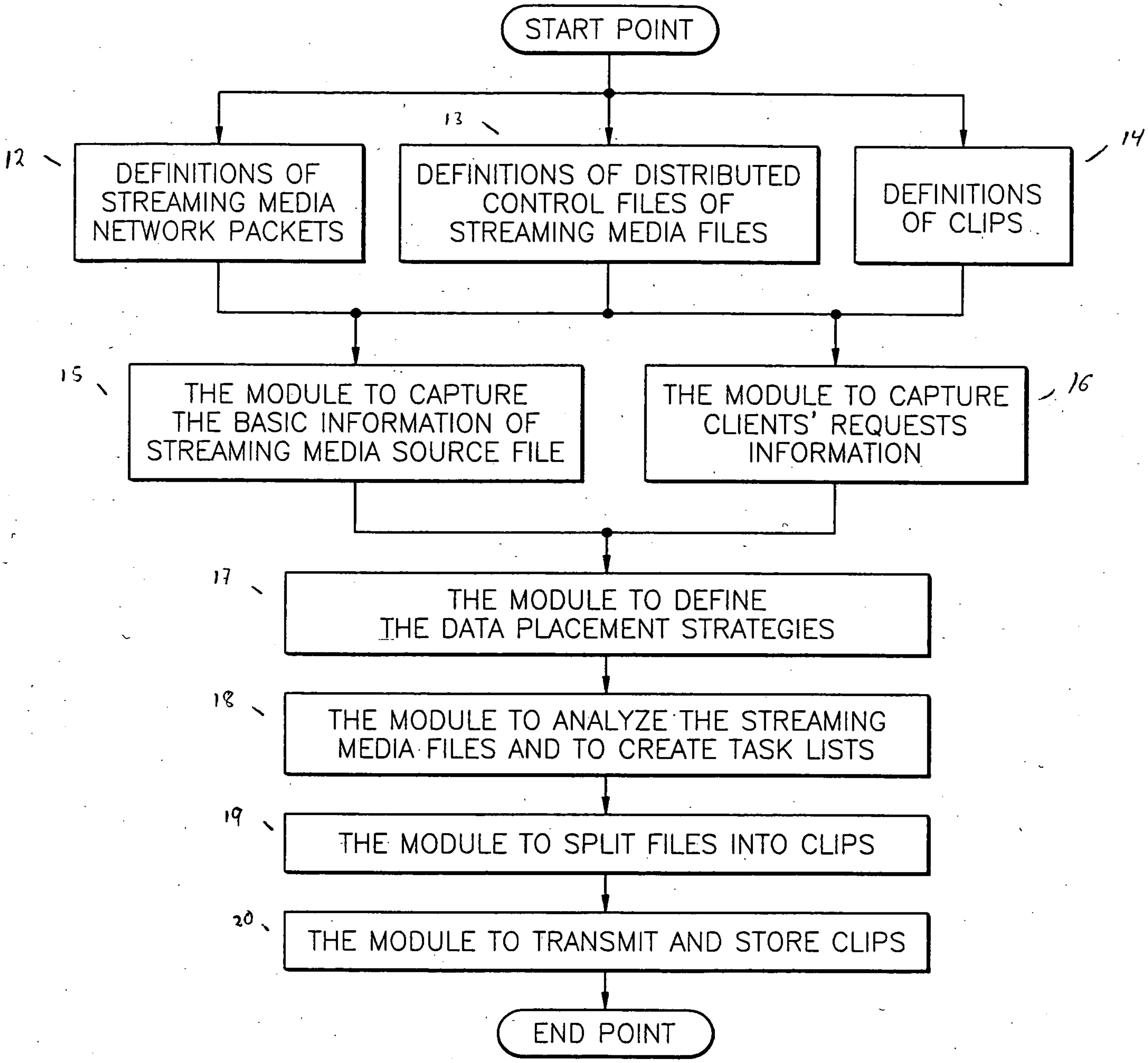

START POINT
12
DEFINITIONS OF STREAMING MEDIA NETWORK PACKETS
13
DEFINITIONS OF DISTRIBUTED CONTROL FILES OF STREAMING MEDIA FILES
14
DEFINITIONS OF CLIPS
15
THE MODULE TO CAPTURE THE BASIC INFORMATION OF STREAMING MEDIA SOURCE FILE
16
THE MODULE TO CAPTURE CLIENTS' REQUESTS INFORMATION
17
THE MODULE TO DEFINE THE DATA PLACEMENT STRATEGIES
18
THE MODULE TO ANALYZE THE STREAMING MEDIA FILES AND TO CREATE TASK LISTS
19
THE MODULE TO SPLIT FILES INTO CLIPS
20
THE MODULE TO TRANSMIT AND STORE CLIPS
END POINT

FIG. 2

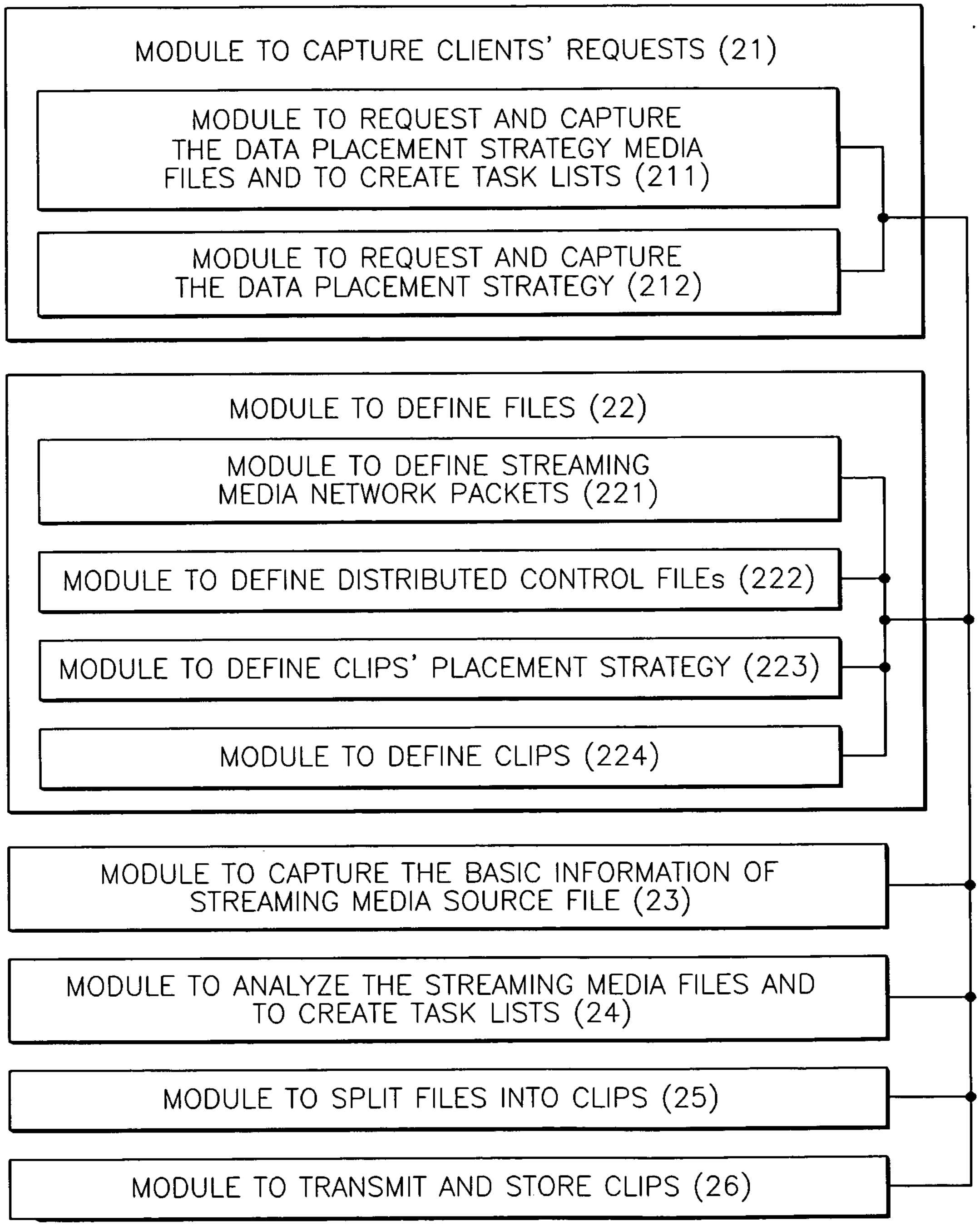
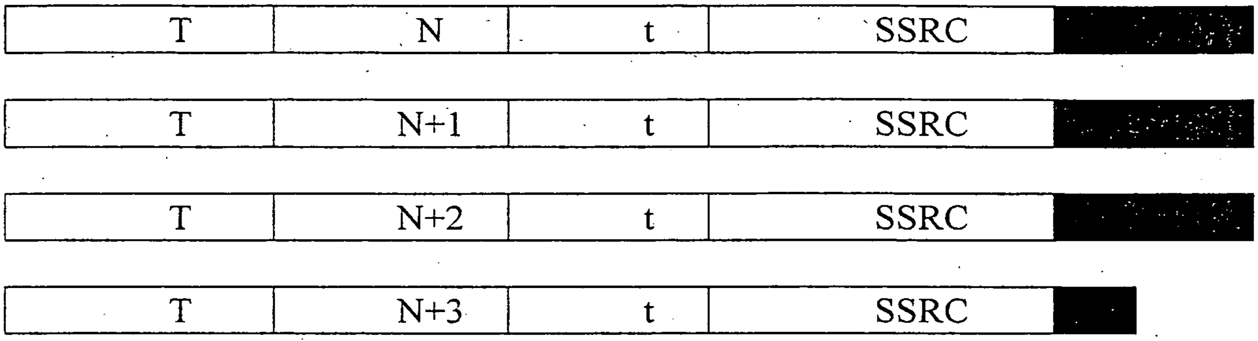

MODULE TO CAPTURE CLIENTS' REQUESTS (21)
MODULE TO REQUEST AND CAPTURE THE DATA PLACEMENT STRATEGY MEDIA FILES AND TO CREATE TASK LISTS (211)
MODULE TO REQUEST AND CAPTURE THE DATA PLACEMENT STRATEGY (212)
MODULE TO DEFINE FILES (22)
MODULE TO DEFINE STREAMING MEDIA NETWORK PACKETS (221)
MODULE TO DEFINE DISTRIBUTED CONTROL FILEs (222)
MODULE TO DEFINE CLIPS' PLACEMENT STRATEGY (223)
MODULE TO DEFINE CLIPS (224)
MODULE TO CAPTURE THE BASIC INFORMATION OF STREAMING MEDIA SOURCE FILE (23)
MODULE TO ANALYZE THE STREAMING MEDIA FILES AND TO CREATE TASK LISTS (24)
MODULE TO SPLIT FILES INTO CLIPS (25)
MODULE TO TRANSMIT AND STORE CLIPS (26)

FIG. 3

STREAMING MEDIA NETWORK PACKETS:

MEDIA TYPE HEAD
SEQUENCE NUMBER TIME STAMP SYNCHRONOUS SOURCE PAYLOAD



T	N	t	SSRC	■
T	N+1	t	SSRC	■
T	N+2	t	SSRC	■
T	N+3	t	SSRC	■

MEDIA TYPE HEAD: UNSIGNED SHORT INTEGER WITH 16 BITS
SEQUENCE NUMBER: UNSIGNED SHORT INTEGER WITH 16 BITS
TIME STAMP: UNSIGNED INTEGER WITH 32 BITS
SYNCHRONOUS SOURCE: UNSIGNED INTEGER WITH 32 BITS
PAYLOAD: AN ARRAY CONSISTED OF UNSIGNED CHAR WITH 8 BITS

FIG. 4

```
//the clips' information
typedef struct Clip
{
      //the storage addresses set of the clips and replicas

      Unsigned int (32 bits)          fHost IP [ MAX_REPLICA_NUM ] ;

      //the space size of the clip.
      Unsigned int 32 bits            fFileSize;
      //the start playtime counted in seconds;
      Float 64 bits              fStartTime;
      //the end playtime counted in seconds;
      Float 64 bits             fEndTime;
      //the sequence number of the first network packet of the clip;
      Unsigned int 32 bits              fStartPacketIndex;
      //the sequence number of the last network packet of the clip;
      Unsigned int 32 bits            fEndPacketIndex;

} Clip;


//the splitting task lists of one source file
typedef struct ClipTable

{

      //the space size of one media file;
      Unsigned int (32 bits)     fFileSize;
      //the hot optionof one film;
      int                    fHot;
      //the name length of the source media file;
      Unsigned char (8 bits)              fNameLen;
      //the number of clips of one source media file;
      Unsigned char (8 bits)              fNumber;
      //the name of the source media file;
      Char                   *fName
      //the structure of each list item;
      Clip                  *fIndex;

} ClipTable;
```

FIG. 5

```
b=AS:1383
a=range:npt=0-    46.57500
m-OTHER 0 RTP/AVP 96
b=AS:1383
a=rtpmap:96 MP1S/90000
a=control:trackID=2
```

FIG. 6

<table>
<tr><td colspan="2">Clip File header</td></tr>
<tr><td colspan="2">Header messages of one stream in the clip file</td></tr>
<tr><td colspan="2">Streaming Media Network Packets</td></tr>
<tr><td colspan="2">Header messages of another stream in the clip file</td></tr>
<tr><td colspan="2">Streaming Media Network Packets</td></tr>
<tr><td></td><td></td></tr>
</table>

FIG. 7

```
typedef struct FileHeader

{

     // Index ID of one clip file
     Unsigned int (16 bits)          fSplit_ID;
     //The version of the current splitting tool
     Unsigned int (32 bits)          fVersion;
     //The time length of the clip
     Float 64 (64 bits)     fMovieDuration
     //The number of the media streams in the clip
     Unsigned int (32 bits)          fNumTracks
     //The average bandwidth of the clip
     Float 64 (64 bits)     fBandWidth;

} File Header
```

FIG. 8

```
typedef struct TrackHeader

{

    //ID of the stream
    Unsigned char (8 bits)            fTrackID;
    //The duration of the stream
    Float (64 bits)          fTrackDuration;
    //The compression ratio of the stream
    Float (64 bits)          fCompressRatio;
    //The start location of the media data of the stream
    Unsigned int (32 bits)           fMediaPosition

} Fileheader
```

FIG. 9

ID OF THE MEDIA STREAM (UNIT 8)	SERIAL NUMBER (UNIT 32)	PLAYTIME (FLOAT 64)	LENGTH OF THE NETWORK PACKET (UNIT 16)	NETWORK PACKET (UNIT 8[ ])

UINT8: UNSIGNED CHAR (8 BITS)
UINT16: UNSIGNED INT (16 BITS)
UINT32: UNSIGNED INT (32 BITS)
FLOAT64: FLOAT (64 BITS)

TITLE: VIDEO SPLITTING AND DISTRIBUTED
PLACEMENT SCHEME FOR ...
INVENTORS: Hai JIN et al.
APPLICATION NO.: New
DOCKET NO.: 1793.1189

FIG. 10

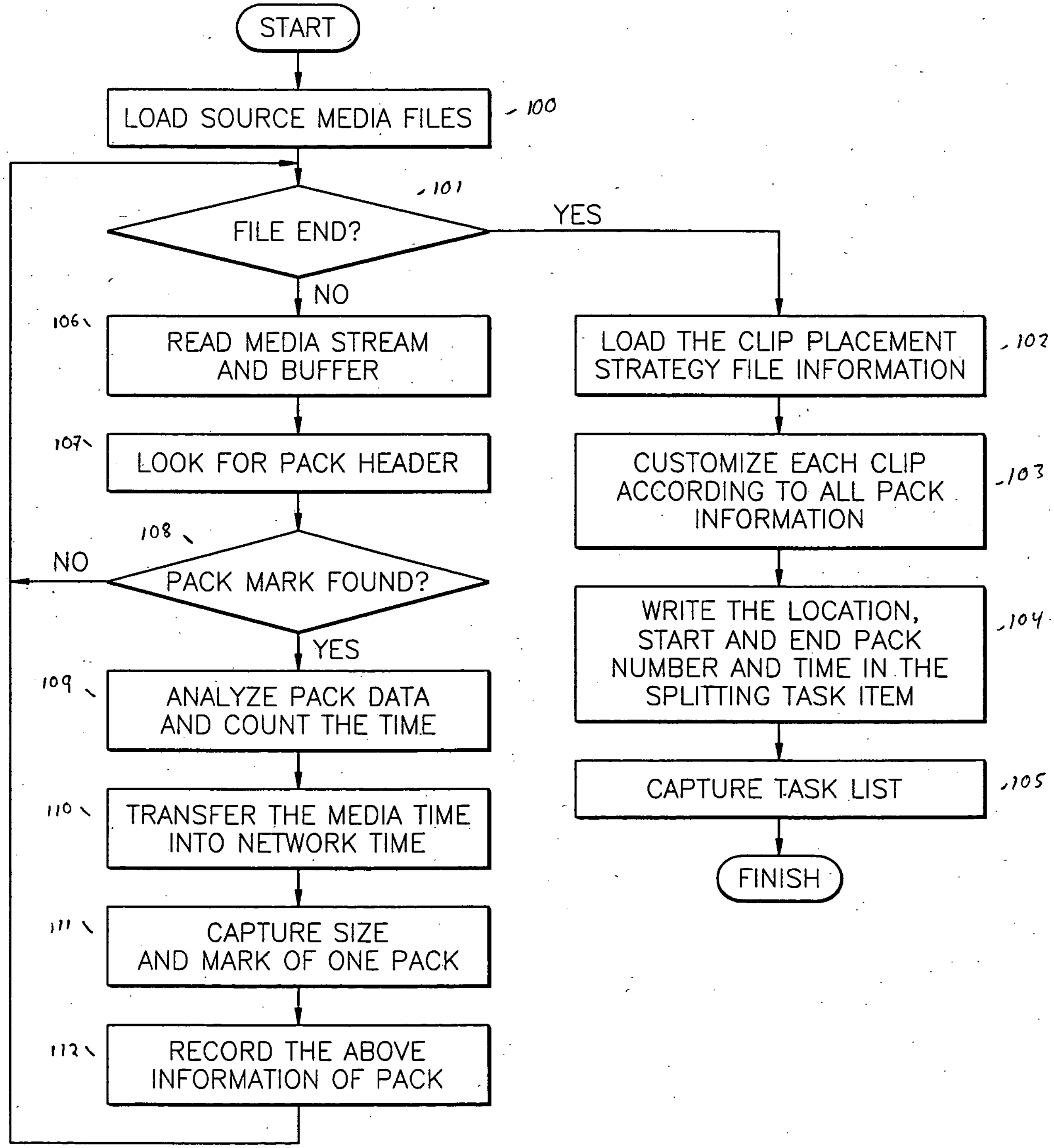
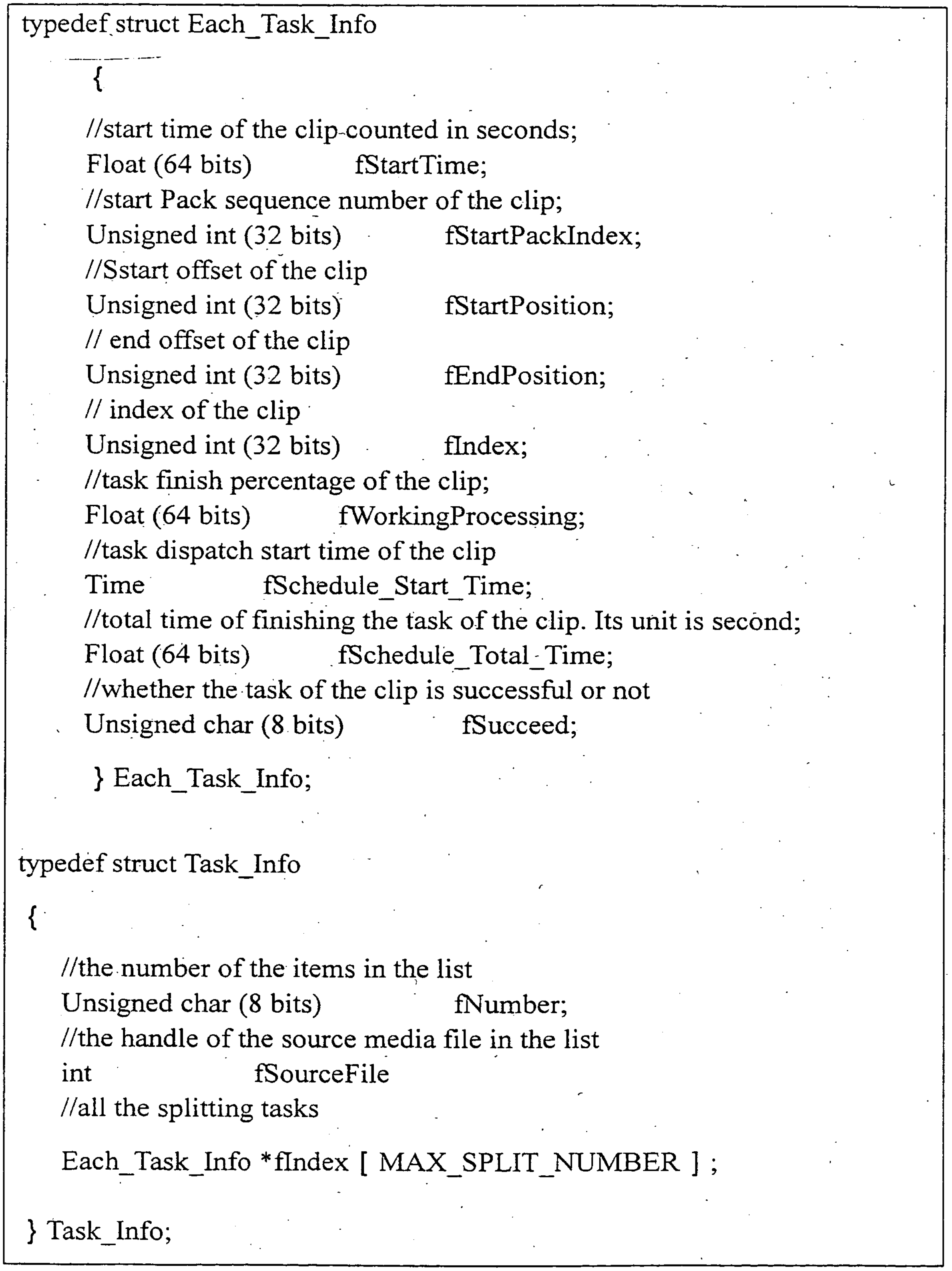
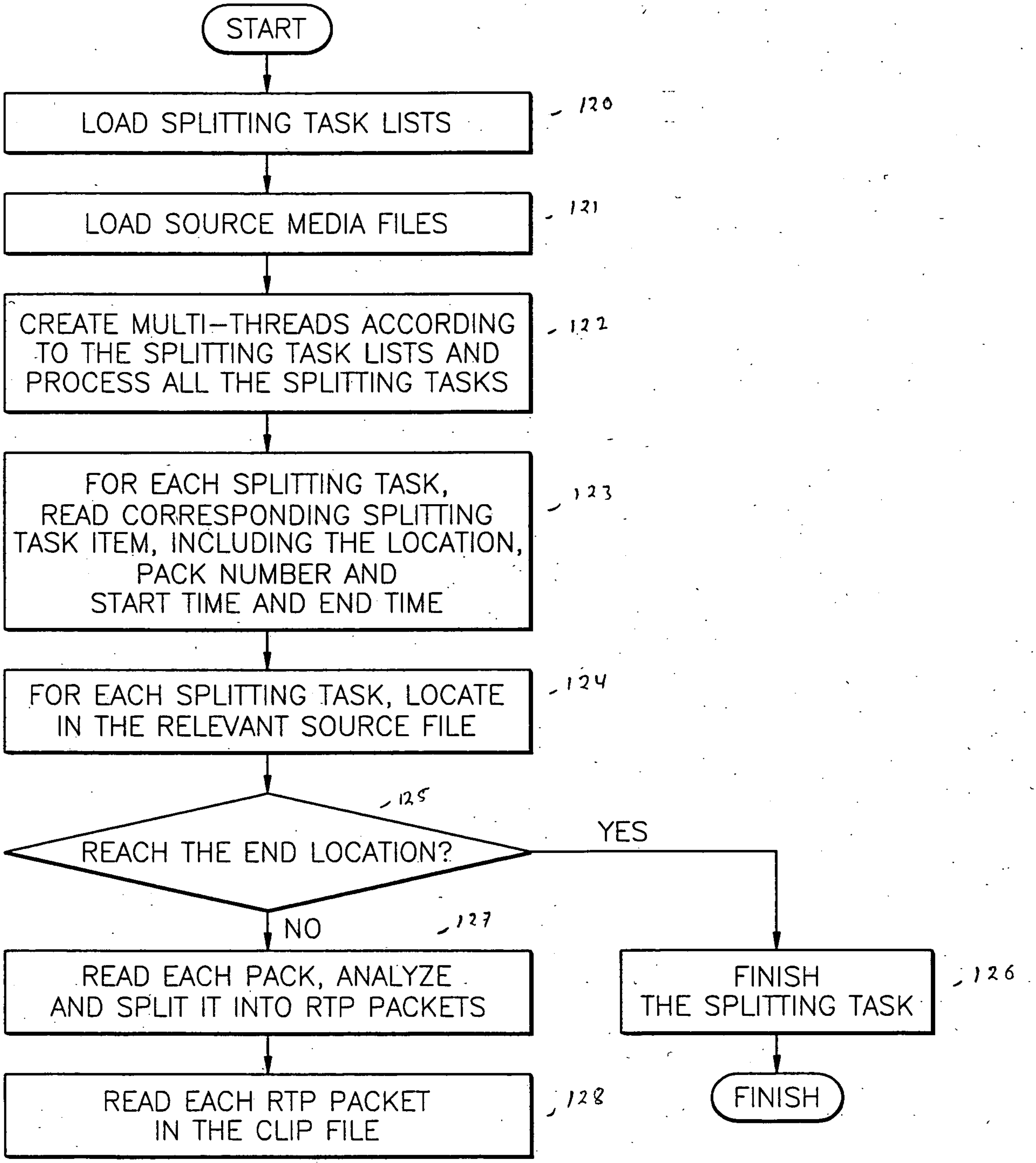

START
LOAD SOURCE MEDIA FILES
100
FILE END?
101
YES
NO
READ MEDIA STREAM AND BUFFER
106
LOOK FOR PACK HEADER
107
PACK MARK FOUND?
108
NO
YES
ANALYZE PACK DATA AND COUNT THE TIME
109
TRANSFER THE MEDIA TIME INTO NETWORK TIME
110
CAPTURE SIZE AND MARK OF ONE PACK
111
RECORD THE ABOVE INFORMATION OF PACK
112
LOAD THE CLIP PLACEMENT STRATEGY FILE INFORMATION
102
CUSTOMIZE EACH CLIP ACCORDING TO ALL PACK INFORMATION
103
WRITE THE LOCATION, START AND END PACK NUMBER AND TIME IN THE SPLITTING TASK ITEM
104
CAPTURE TASK LIST
105
FINISH

FIG. 11



```
typedef struct Each_Task_Info
    {
    //start time of the clip-counted in seconds;
    Float (64 bits)          fStartTime;
    //start Pack sequence number of the clip;
    Unsigned int (32 bits)          fStartPackIndex;
    //Sstart offset of the clip
    Unsigned int (32 bits)          fStartPosition;
    // end offset of the clip
    Unsigned int (32 bits)          fEndPosition;
    // index of the clip
    Unsigned int (32 bits)          fIndex;
    //task finish percentage of the clip;
    Float (64 bits)          fWorkingProcessing;
    //task dispatch start time of the clip
    Time               fSchedule_Start_Time;
    //total time of finishing the task of the clip. Its unit is second;
    Float (64 bits)          fSchedule_Total_Time;
    //whether the task of the clip is successful or not
    Unsigned char (8 bits)          fSucceed;

    } Each_Task_Info;


typedef struct Task_Info

{

  //the number of the items in the list
  Unsigned char (8 bits)          fNumber;
  //the handle of the source media file in the list
  int               fSourceFile
  //all the splitting tasks

  Each_Task_Info *fIndex [ MAX_SPLIT_NUMBER ] ;

} Task_Info;
```

FIG. 12


START
LOAD SPLITTING TASK LISTS
120
LOAD SOURCE MEDIA FILES
121
CREATE MULTI-THREADS ACCORDING TO THE SPLITTING TASK LISTS AND PROCESS ALL THE SPLITTING TASKS
122
FOR EACH SPLITTING TASK, READ CORRESPONDING SPLITTING TASK ITEM, INCLUDING THE LOCATION, PACK NUMBER AND START TIME AND END TIME
123
FOR EACH SPLITTING TASK, LOCATE IN THE RELEVANT SOURCE FILE
124
REACH THE END LOCATION?
125
YES
NO
127
READ EACH PACK, ANALYZE AND SPLIT IT INTO RTP PACKETS
FINISH THE SPLITTING TASK
126
READ EACH RTP PACKET IN THE CLIP FILE
128
FINISH